

Remarks.—This is the third species of the genus to be described, the first being *S. polutima* Blake from Cuba, the second, *S. punctatissima* Blake from Jamaica. In its short broad prothorax and coarse elytral punctation this resembles the Jamaican species, but in its ovate shape it is more like the Cuban species. All three species are shining black with coarse, confused punctation, and the prothorax has broad oblique angles anteriorly and in the middle of the side a distinctive angularity.

***Homoschema dominicae*, n. sp.**

(Fig. 8)

Lustrous, head, prothorax, legs and antennae orange yellow, elytra bluish or greenish, often purplish, very finely punctate.

Head with wide set eyes, rounded occiput, a line of punctures from eyes to well developed frontal tubercles, a very short carina and short lower front of face. Antennae extending below humeri, basal joints swollen. Prothorax moderately convex with well rounded sides and oblique anterior angles and small tooth at basal angles, basal margin nearly straight; disc nearly impunctate, lustrous orange yellow. Scutellum dark brown. Elytra lustrous greenish or purplish blue, moderately convex with transverse depression below basal callosities; very finely and inconspicuously punctate. Body beneath with abdomen and sometimes breast brown; hind legs with swollen femora. Length 2.3–2.6 mm; width 1.3–1.5 mm.

Type, male, and eight paratypes, USNM 69727.

Type locality.—Mero, Dominica, collected by O. S. Flint, Jr., 24 July 1963.

Remarks.—This is one of the smaller species of *Homoschema* and with its dark abdomen akin to *H. nigriventrum* Blake from Puerto Rico, although the aedeagus is more like that of *H. jamaicense* Blake.

NEW SPECIES OF NEOACARUS HALBERT AND VOLSELLACARUS

COOK FROM NORTH AMERICA¹

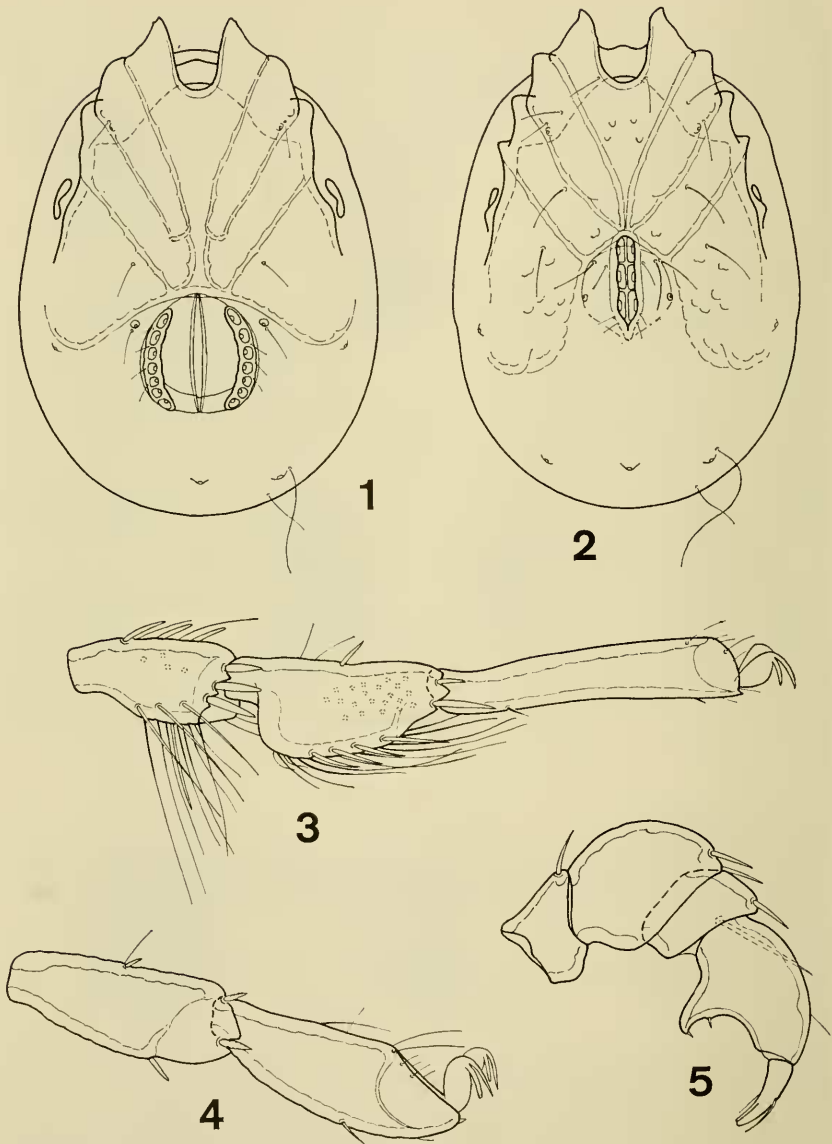
(ACARINA: NEOACARIDAE)

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Cook (1963) described four species of *Neoacarus* and the new neoacarid genus *Volsellacarus* from the interstitial waters of North America. The present study² adds two new species of *Neoacarus* and one new species of *Volsellacarus*, all from the ground water habitat. In presenting measurements in this paper, those of the holotype and

¹ Contribution No. 189 from the Department of Biology, Wayne State University.

² Supported by a grant (GB-3717) from the National Science Foundation.



Figs. 1-5, *Neocarus occidentalis*, n. sp.: 1, ventral shield, ♀; 2, ventral shield, ♂; 3, III-Leg-4, 5, 6, ♂; 4, I-Leg-5 and 6, ♀; 5, palp, ♂.

allotype are given first. If a series of specimens is available, the range of variation is given in parentheses following the measurements of the primary types. Holotypes and allotypes will be placed in the Field Museum of Natural History (= Chicago Natural History Museum).

***Neoacarus occidentalis*, n. sp.**

(Figs. 1-5)

Male: Dorsal shield 502 μ in length, 349 μ in width; ventral shield, including first coxae, 562 μ in length, 410 μ in width; ventral shield oval; first coxae fused medially without any trace of a suture line between them; third and fourth coxae separated medially by the genital bay; fourth coxae extending well posterior to the genital field (fig. 2); genital field long and narrow, 107 μ in length; three pairs of elongated genital acetabula present, these occupying opening of gonopore; gonopore flanked by a pair of glandularia; eyes reduced, integumental pigment absent.

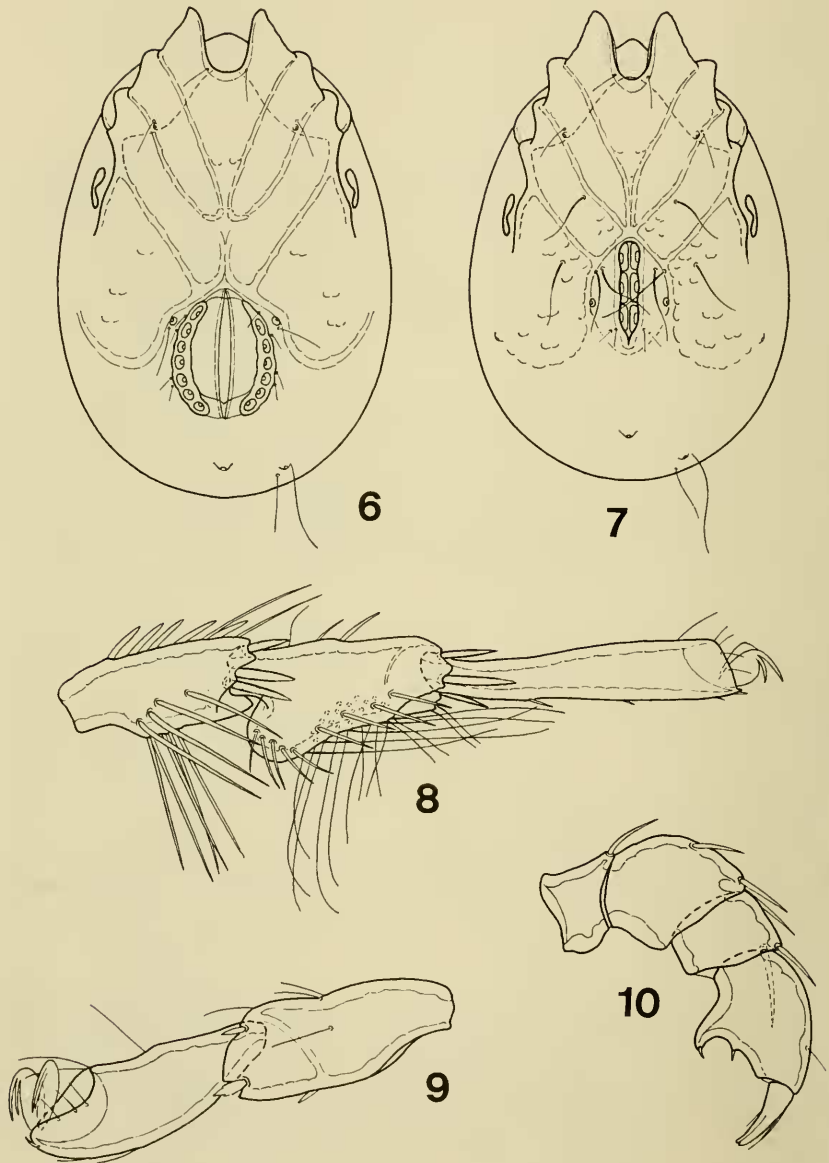
Dorsal lengths of the palpal segments: P-I, 24 μ ; P-II, 38 μ ; P-III, 19 μ ; P-IV, 42 μ ; P-V, 22 μ ; ventral portion of P-IV expanded into a pointed projection, the distal margin of which bears 2 spine-like setae (fig. 5); dorsal lengths of the distal segments of the first leg: I-Leg-4, 80 μ ; I-Leg-5, 97 μ ; I-Leg-6, 110 μ ; dorsal lengths of the distal segments of the third leg: III-Leg-4, 103 μ ; III-Leg-5, 134 μ ; III-Leg-6, 176 μ ; III-Leg-5 expanded ventrally, gradually tapering towards distal end; fig. 3 illustrates the chaetotaxy of these segments; anterior surface of III-Leg-5 with a patch of swimming hairs (shown as stippled setal bases on fig. 3).

Female: Dorsal shield 509 μ in length, 364 μ in width; ventral shield, including projecting first coxae, 566 μ in length, 426 μ in width; ventral shield oval; first coxae fused medially without a trace of a suture line; second and third coxae slightly separated medially; fourth coxae forming a shallow genital bay; genital field 131 μ in length, 129 μ in width; gonopore relatively large; 7 genital acetabula present on each side, these lying on elongated sclerites on their respective sides; acetabular sclerites only lightly fused with the ventral shield (fig. 1); eyes reduced in size, integumental pigmentation absent.

Dorsal lengths of the palpal segments: P-I, 19 μ ; P-II, 40 μ ; P-III, 17 μ ; P-IV, 42 μ ; P-V, 22 μ ; structure and chaetotaxy of palp similar to that illustrated for the male; dorsal lengths of the distal segments of the first leg: I-Leg-4, 79 μ ; I-Leg-5, 93 μ ; I-Leg-6, 100 μ ; Fig. 4 illustrates the proportions and chaetotaxy of I-Leg-5 and 6.

Types: Holotype, adult male, taken in a gravel bar in Battle Creek adult female, same data as holotype. A newly metamorphosed male four miles west of Viola, Shasta Co., California, July 30, 1966; allotype, which appears to belong to this species was collected in a gravel bar in Bingham Creek approximately eight miles northeast of Satsop, Mason Co., Washington, August 5, 1966. It is not assigned to the type series.

Discussion: This is the first species of *Neoacarus* known from the West Coast area of North America. The structure of the palp, with the projection on P-IV ventral rather than distoventral in position, will



Figs. 6-10, *Neocarus minimus*, n. sp.: 6, ventral shield, ♀; 7, ventral shield, ♂; 8, III-Leg-4, 5, 6, ♂; 9, I-Leg-5 and 6, ♀; 10, palp, ♀.

separate *N. occidentalis* from any previously described species. However, the following species possesses a similar palp. See the discussion section under the latter.

***Neocarus minimus*, n. sp.**

(Figs. 6–10)

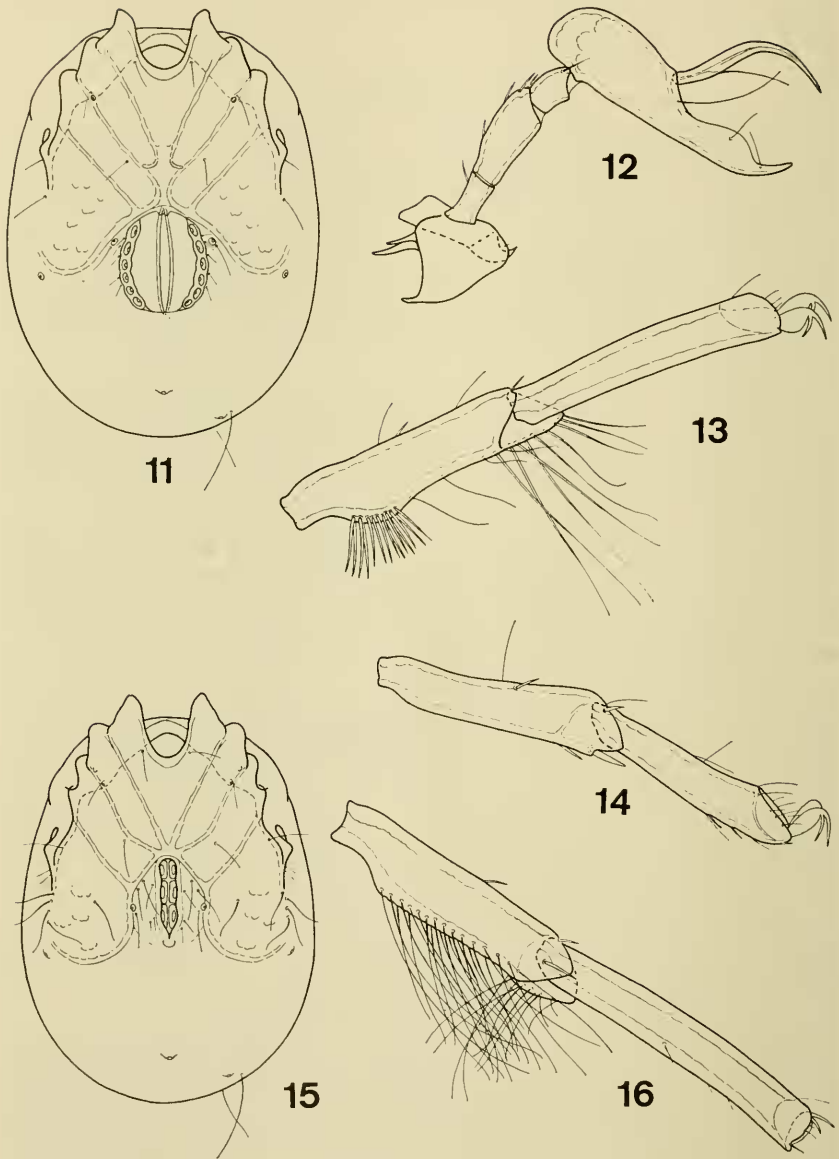
Male: Dorsal shield 380 μ (380–403 μ) in length, 273 μ (273–289 μ) in width; ventral shield, including first coxae, 456 μ (456–470 μ) in length, 304 μ (304–327 μ) in width; ventral shield oval; first coxae fused medially without any trace of a median suture line; third and fourth coxae separated medially by the genital field; fourth coxae extending only slightly posterior to the genital field; genital field long and narrow, 95 μ (95–97 μ) in length; 3 pairs of genital acetabula present, these occupying opening of gonopore; gonopore flanked by a pair of glandularia and 2 pairs of relatively long setae (fig. 7); eyes reduced, integumental pigment absent.

Dorsal lengths of the palpal segments: P-I, 20 μ (19–20 μ); P-II, 34 μ (32–35 μ); P-III, 18 μ (17–18 μ); P-IV, 35 μ (35–37 μ); P-V, 19 μ (18–21 μ); ventral portion of P-IV expanded into a pointed projection, the distal margin of which bears 2 small spine-like setae; dorsal lengths of the distal segments of the first leg: I-Leg-4, 69 μ (66–69 μ); I-Leg-5, 95 μ (90–95 μ); I-Leg-6, 107 μ (104–110 μ); dorsal lengths of the distal segments of the third leg: III-Leg-4, 93 μ (87–93 μ); III-Leg-5, 107 μ (104–107 μ); III-Leg-6, 135 μ (131–140 μ); III-Leg-5 expanded ventrally, gradually tapering towards distal end; ventral expansion of III-Leg-5 pointing somewhat proximally; fig. 8 illustrates the chaetotaxy of these segments; anterior surface of III-Leg-5 bearing a small patch of swimming hairs (shown as stippled setal bases in fig. 8).

Female: Dorsal shield 414 μ (395–414 μ) in length, 304 μ (289–304 μ) in width; ventral shield, including first coxae, 486 μ (464–486 μ) in length, 334 μ (326–334 μ) in width; ventral shield oval; first coxae fused medially without a trace of a suture line; fourth coxae forming a relatively deep genital bay (fig. 6); genital field 121 μ (117–121 μ) in length, 103 μ (98–103 μ) in width; gonopore relatively large; 7–8 (6–8) genital acetabula present on each side, these lying on elongated sclerites on their respective sides; acetabular sclerites fused with the ventral shield; eyes reduced, integumental pigmentation absent.

Dorsal lengths of the palpal segments: P-I, 24 μ (21–24 μ); P-II, 35 μ (34–35 μ); P-III, 20 μ (17–20 μ); P-IV, 36 μ (36–37 μ); P-V, 20 μ (17–20 μ); fig. 10 illustrates the proportions and chaetotaxy of the palp; dorsal lengths of the distal segments of the first leg: I-Leg-4, 64 μ (62–64 μ); I-Leg-5, 87 μ (86–87 μ); I-Leg-6, 103 μ (96–103 μ); fig. 9 shows I-Leg-5 and 6.

Types: Holotype, adult male, collected in a gravel bar in a stream near Twin Mountain, Coos Co., New Hampshire, August 21, 1964; allotype, adult female, from gravel deposits in a stream near Griffen (on Route #8, three miles from Warren Co. line), Hamilton Co., New York, August 18, 1964. Paratypes: two males, same data as holotype; one female, same data as allotype; one male, collected in a gravel bar in a small stream near Warm Springs, Bath Co., Virginia, July 16, 1963.



Figs. 11-15, *Volsellacarus sabulonus*, n. sp.: 11, ventral shield, ♀; 12, palp, ♀; 13, III-Leg-5 and 6, ♂; 14, I-Leg-5 and 6, ♀; 15, ventral shield, ♂. Fig. 16, *V. ovalis* Cook: III-Leg-5 and 6, ♂.

Discussion: The present species resembles the preceding species, *N. occidentalis*, in structure of the palp but may be easily distinguished as follows. The female of *minimus* differs from all previously described species of the genus in possessing a deep genital bay (fig. 6). Males of *minimus* and *occidentalis* may be easily separated by the structure of the third leg (figs. 3 and 8) and the morphology of the ventral shield. Males of *N. occidentalis* have a much deeper genital bay. *N. minimus* is also the smallest known species in the genus.

***Volsellacarus sabulonius*, n. sp.**

(Figs. 11–15)

Male: Dorsal shield 638 μ in length, 456 μ in width; ventral shield, including first coxae, 718 μ in length, 517 μ in width; ventral shield oval; first coxae fused medially without a trace of a suture line medially; third and fourth coxae separated medially by the genital field; fourth coxae extending slightly posterior to the genital field; 4 long setae present on each side immediately posterior to the insertions of the fourth legs (fig. 15); genital field long and narrow, 138 μ in length; 3 pairs of elongated genital acetabula present, these occupying the opening of the gonopore; gonopore flanked by a pair of glandularia; eyes reduced, integumental pigmentation absent.

Dorsal lengths of the palpal segments: P-I, 50 μ ; P-II, 88 μ ; P-III, 52 μ ; P-IV (including distoventral projection), 240 μ ; P-V, 124 μ ; structure of palp similar to that illustrated for the female; dorsal lengths of the distal segments of the first leg: I-Leg-4, 145 μ ; I-Leg-5, 171 μ ; I-Leg-6, 173 μ ; dorsal lengths of the distal segments of the third leg: III-Leg-4, 180 μ ; III-Leg-5, 221 μ ; III-Leg-6, 201 μ ; ventral side of III-Leg-5 with a slight bulge near proximal end, this bulge bearing a patch of short slightly-thickened setae (fig. 13); a few swimming hairs located at distal end of III-Leg-5.

Female: Dorsal shield 745 μ (684–745 μ) in length, 555 μ (498–555 μ) in width; ventral shield, including first coxae, 836 μ (764–836 μ) in length, 616 μ (578–616 μ) in width; ventral shield oval; first coxae fused medially without a trace of a median suture line; second and third coxae slightly separated medially; fourth coxae forming a shallow genital bay; genital field 183 μ (178–183 μ) in length, 166 μ (159–166 μ) in width; gonopore relatively large; 6 pairs of genital acetabula present on each side, these lying on elongated sclerites on their respective sides (fig. 11); acetabular sclerites fused with the ventral shield; eyes reduced, integumental pigmentation absent.

Dorsal lengths of the palpal segments: P-I, 67 μ (64–67 μ); P-II, 110 μ (104–110 μ); P-III, 64 μ (62–64 μ); P-IV (including distoventral projection), 322 μ (312–322 μ); P-V, 169 μ (162–169 μ); fig. 12 illustrates the proportions and chaetotaxy of the palp; dorsal lengths of the distal segments of the first leg: I-Leg-4, 173 μ (148–173 μ); I-Leg-5, 190 μ (180–190 μ); I-Leg-6, 180 μ (169–180 μ); fig. 14 shows I-Leg-5 and 6.

Types: Holotype, adult male, taken in a sand bar in a small stream five miles west of Marietta (on Alternate US 50), Washington Co., Ohio, July 26, 1964; allotype, adult female, from a gravel bar in a small creek six miles north of Millboro Springs, Bath Co., Virginia, July 24, 1964; paratype, one female, same data as allotype.

Discussion: This is the second known species in the genus *Volsellacarus*. It changes the original conception of the genus only in that the first coxae of the male may be pointed (fig. 15) rather than rounded as in *V. ovalis*. III-Leg-5 of the male, while without pronounced sexual dimorphism as in *Neoacarus*, does exhibit valuable specific characters. Figs. 13 and 16 illustrate III-Leg-5 and 6 of *sabulonius* and *ovalis* respectively. The new species is proportionally much narrower than *V. ovalis*.

Two species of *Neoacarus*, originally described from the Ozark and Rocky Mountain area, are now known to occur in eastern North America.

Neoacarus similis Cook: One male, from gravel deposits in a stream near Griffen (on Route #8, three miles from Warren Co. line), Hamilton Co., New York, August 19, 1964; one female, taken in a gravel bar in a small stream near Limestone, Victoria Co., New Brunswick, August 26, 1964; three males, one female, found in a gravel bar in the North Branch of the Meduxnekeag River at Monticello, Aroostook Co., Maine, August 28, 1964.

Neoacarus ozarkensis Cook: One male, taken in a gravel deposit in Knapp's Creek near Minnehaha Springs, Pocahontas Co., West Virginia, July 22, 1964; one male, two females, from gravel deposits in a stream near Griffen (on Route #8, three miles from Warren Co. line), Hamilton Co., New York, August 19, 1964.

REFERENCES

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A NEW SPECIES OF LYGAEUS FROM PERU (HEMIPTERA: LYGAEIDAE)

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The genus *Lygaeus* Fabricius is the type genus of the family Lygaeidae and was originally used to include many species now in other heteropterous families as well as throughout the Lygaeidae. Attempts to better define the various genera of the Lygaeidae have resulted in the use of the phallus as a taxonomic character. Ashlock

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